



GGOS Chair Report

presented by
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GGOS Days

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Tsukuba, Japan

International Association of Geodesy

- The mission of the IAG is to advance geodesy
- This mission is performed by its components
 - Commissions and Inter-commission Committees
 - Services
 - Global Geodetic Observing System (GGOS)
- IAG Commissions & Inter-commission Committees
 - Represent the major fields of geodetic research within the IAG
 - Represent the IAG in all relevant scientific matters
 - Commission 1: Reference Frames
 - Commission 2: Gravity Field
 - Commission 3: Earth Rotation and Geodynamics
 - Commission 4: Positioning and Applications

IAG Services

- Organize the collection and reduction of geodetic observations
 - Create the geodetic products needed for scientific research and societal applications
- Geometry
 - IERS, IGS, IVS, ILRS, IDS
- Gravimetry
 - IGFS, BGI, ISG, IGETS, ICGEM, IDEMS
- Oceanography
 - PSMSL
- Standards
 - BIPM

Global Geodetic Observing System

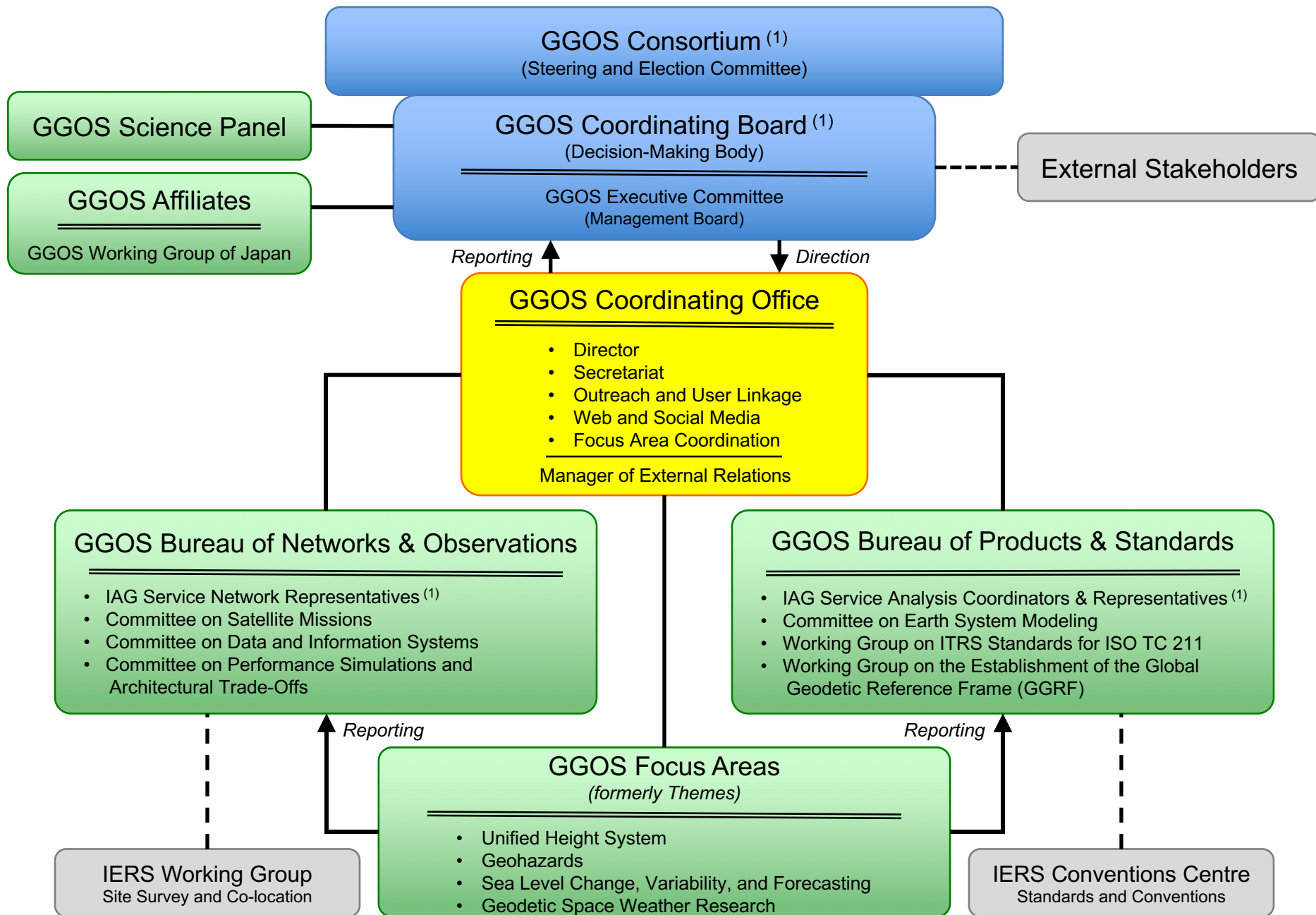
- Established by IAG
 - 2003 as IAG Project; 2007 as full component of IAG
- *The observing system of the IAG*
 - Organize the technique-specific Services under one unifying umbrella
 - Form a comprehensive geodetic observing instrument
 - Integrate the hitherto separate pillars of geodesy (shape, rotation, and gravity) into one consistent observing system
- Provide the geodetic expertise and infrastructure needed to monitor the Earth system and to conduct global change research
 - IAG Commissions and Services are the backbone of GGOS
- Represents IAG in GEO & contributes to GEOSS

GGOS Mission

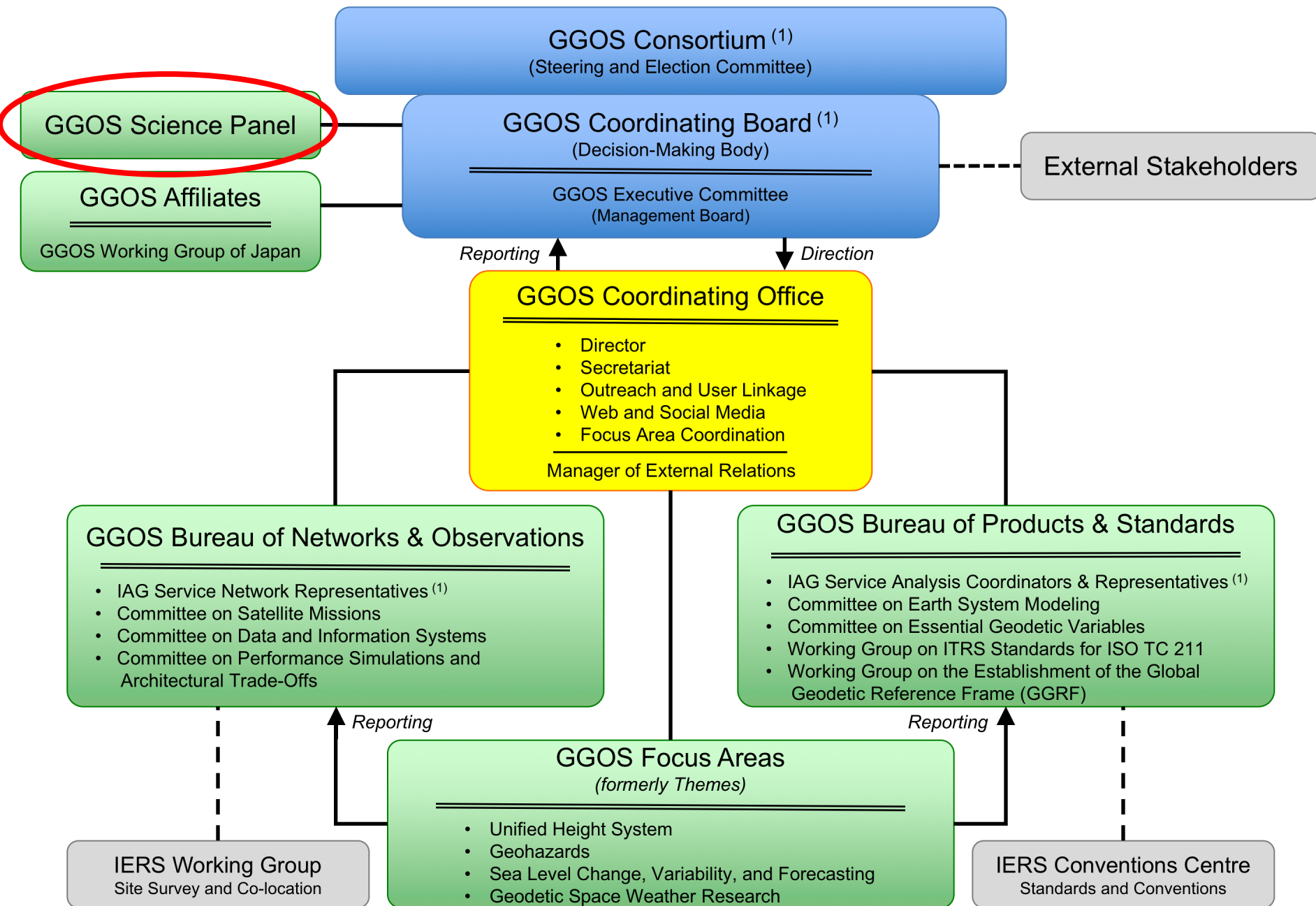
We live on a dynamic planet in constant motion that requires long-term, continuous quantification of its changes in a truly stable frame of reference.

The mission of GGOS is:

- *to provide the observations needed to monitor, map and understand changes in the Earth's shape, rotation and mass distribution;*
- *to provide the global geodetic frame of reference that is the fundamental backbone for measuring and consistently interpreting key global change processes and for many other scientific and societal applications;*
- *to benefit science and society by providing the foundation upon which advances in Earth and planetary system science and applications are built.*



(1) GGOS is built upon the foundation provided by the IAG Services, Commissions, and Inter-Commission Committees



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Science Panel

- **Role**
 - Independent, multi-disciplinary advisory board
 - Provides scientific support & guidance to GGOS steering & coordination entities
 - Represents geodetic and geoscience communities at GGOS meetings
- **Activities**
 - Supports all other GGOS entities upon request
 - Contributes to GGOS publications
 - Reference document, journal articles
 - Organizes & participates in GGOS Science workshops
 - Geodesy, Astronomy, and Geophysics in Earth Rotation, Wuhan, July 2016
 - Co-Organizes (with IERS) Unified Analysis Workshops
 - Paris, France; July 2017
 - Organizes & participates in GGOS sessions at conferences
 - EGU, AGU, IAG, IUGG, AOGS, JpGU
 - Participates in GGOS meetings
 - Consortium, Coordinating Board, Executive Committee

Science Panel Members

IAG Commission 1

Geoff Blewitt (USA)

Markus Rothacher (Switzerland)

IAG Commission 2

Thomas Gruber (Germany)

Kosuke Heki, Chair (Japan)

IAG Commission 3

Jianli Chen (USA)

José Ferrándiz (Spain)

IAG Commission 4

Pawel Wielgosz (Poland)

Jens Wickert (Germany)

IAG ICC Theory

Mattia Crespi (Italy)

Yoshiyuki Tanaka (Japan)

GGOS Focus Area 1

(Unified Height System)

Bernhard Heck (Germany)

GGOS Focus Area 2

(Geohazards)

Diego Melgar (USA)

GGOS Focus Area 3

(Sea Level Change)

Don Chambers (USA)

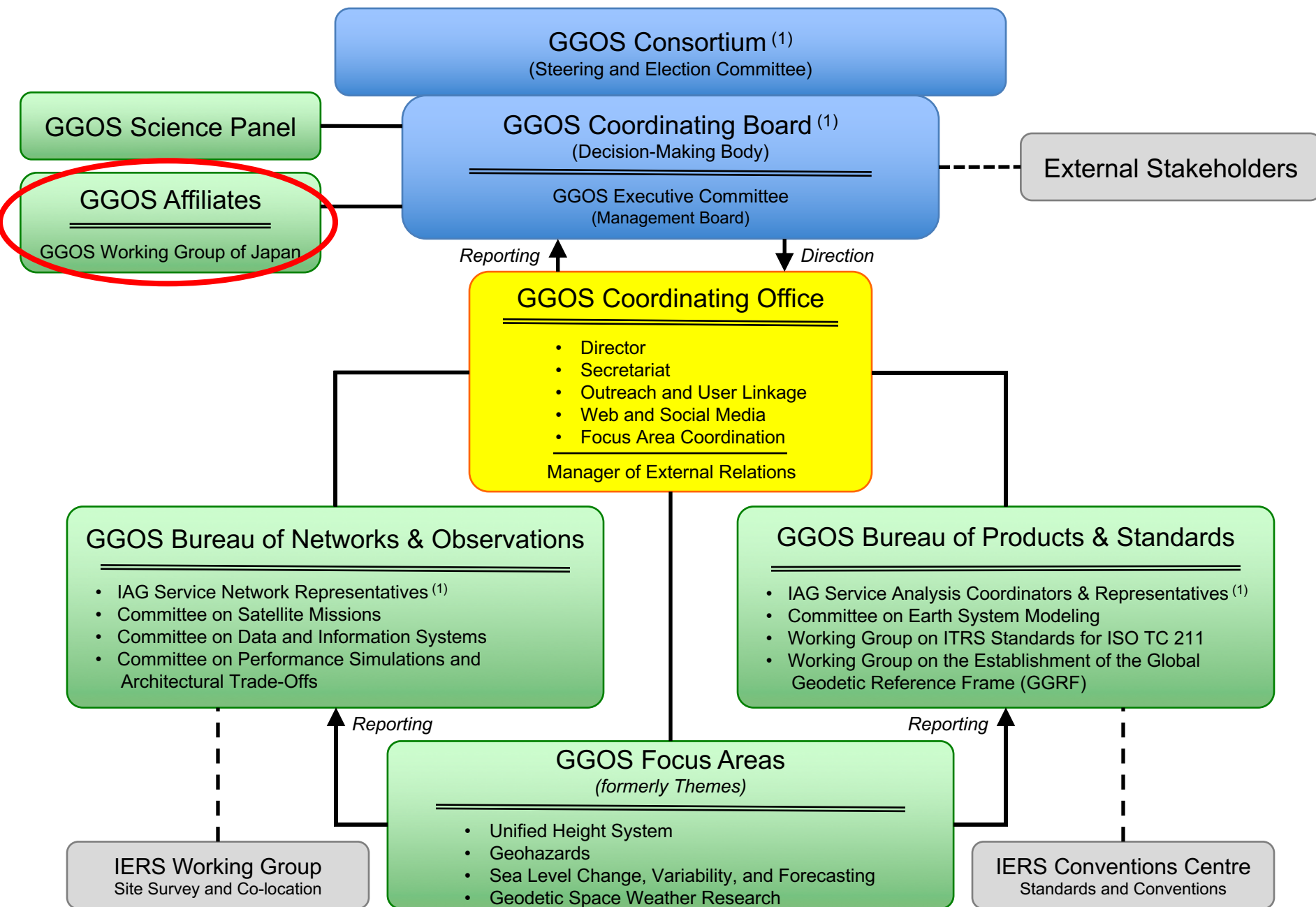
GGOS Focus Area 4

(Space Weather Research)

Ehsan Forootan (UK)

Immediate Past Chair

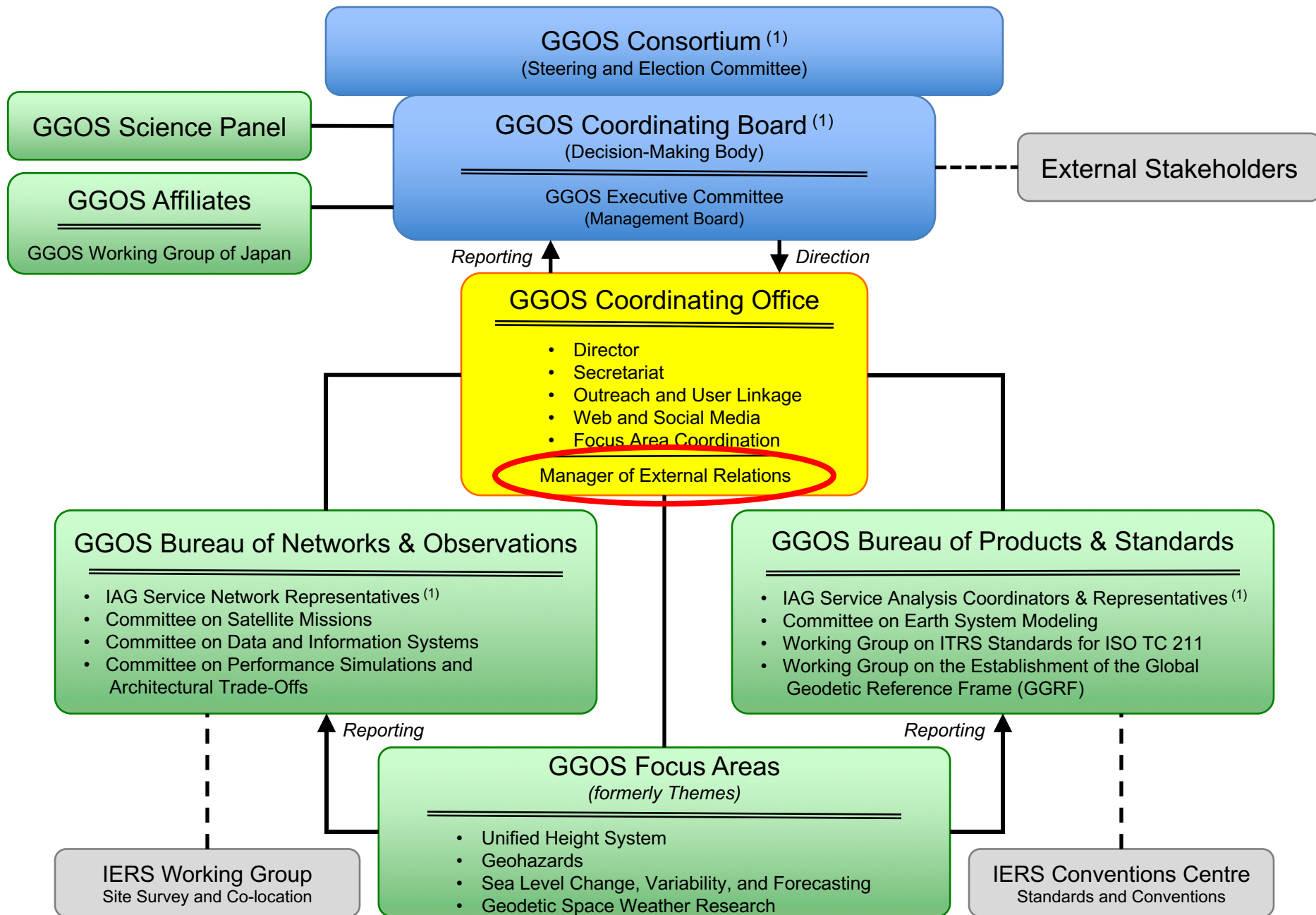
Richard Gross (USA)



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GGOS Affiliate

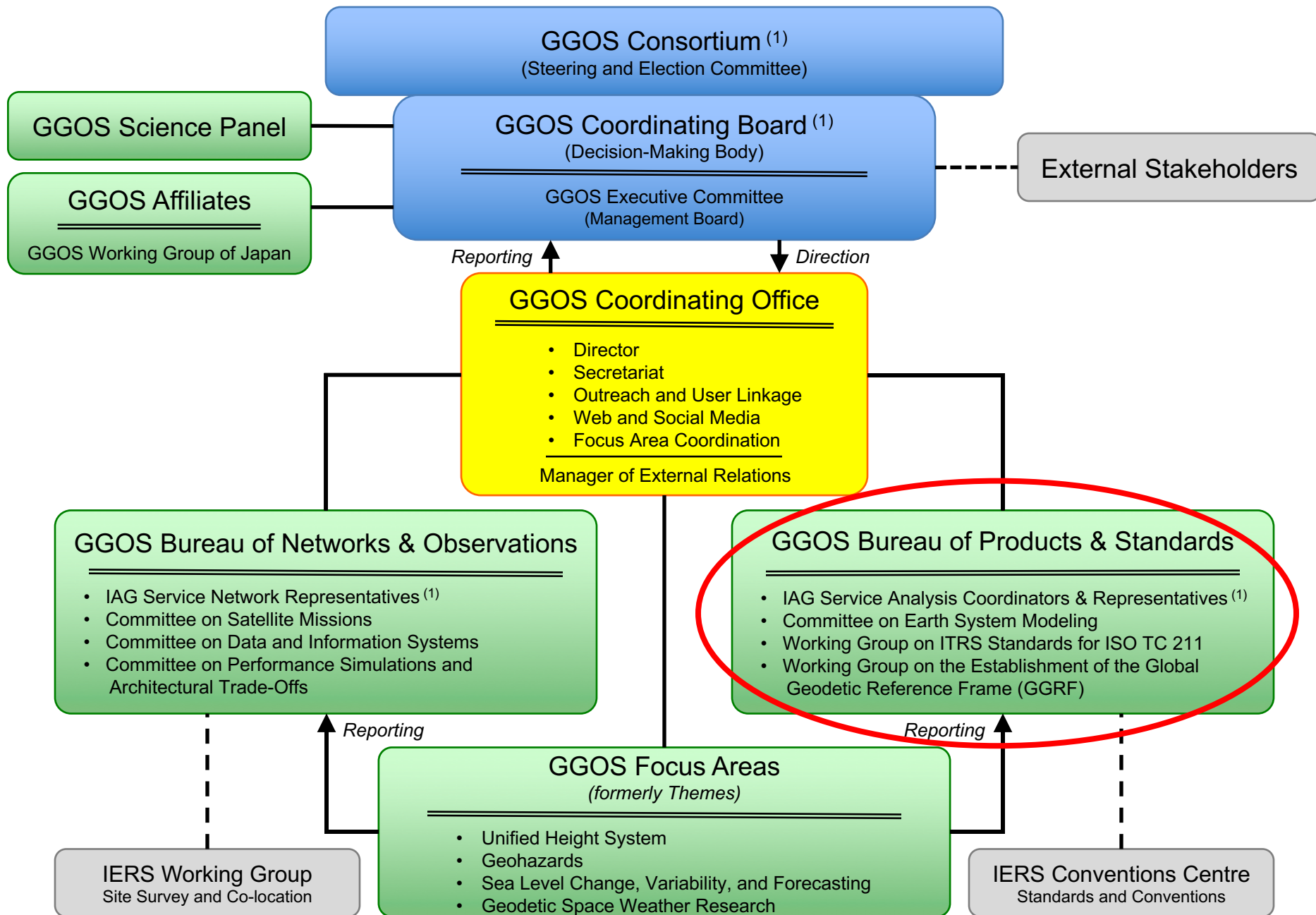
- National or regional organization
 - That coordinates space-geodetic activities there
- Established to increase participation in GGOS
 - Particularly from under-represented areas
 - Africa, Asia, South and Central America
- Is a component of GGOS
 - With representation on Consortium and Coordinating Board
 - Each GGOS Affiliate has 1 representative to Consortium
 - Collectively they have 2 representatives to Coordinating Board
- First GGOS Affiliate
 - GGOS Working Group of Japan
 - Established in 2013; Chair: Toshi Otsubo of Hitotsubashi University, Japan
 - Provides forum for multi-technique, space-geodetic discussions within Japan
 - Strives to improve quality of observations & encourage collaboration in Japan
- Encourage others to become GGOS Affiliates
 - Particularly important for nations/regions where multiple agencies own space-geodetic equipment



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Manager of External Relations

- Expanding involvement in external organizations
 - Group on Earth Observations (GEO)
 - GGOS Chair appointed to GEO Programme Board for 2018-2020
 - Committee on Earth Observation Satellites (CEOS)
 - Limited participation at present
 - Should be expanded to complement GGOS participation in GEO
 - UN-GGIM Subcommittee on Geodesy
 - Will establish an appropriate governance mechanism for sustaining GGRF
- Requires better approach to managing activities
 - Past approach rather *ad hoc* in nature
 - Volunteer-based
 - Little long-term stability in representation
- Position of Manager of External Relations created
 - To coordinate GGOS engagement with external organizations
 - Resides within GGOS Coordinating Office
 - Appointed by GGOS Chair subject to approval by GGOS Coordinating Board
 - Member of Coordinating Board and Executive Committee
- Allison Craddock selected as first Manager



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Essential Geodetic Variables

- Observed variables
 - Crucial to characterizing geodetic properties of Earth
 - Key to sustainable geodetic observations
 - Positions of reference objects (ground stations, radio sources), EOPs
 - Gravity measurements (ground-based, space-based)
- Assign requirements to each EGV
 - Accuracy, spatial and temporal resolution, latency, stability, ...
- Derive requirements
 - On EGV-dependent products (TRF, CRF, ...)
 - On infrastructure (observing systems)
- Can be used to update GGOS2020 book
 - Bottoms-up approach to deriving requirements
 - Complements top-down approach used in GGOS2020 book (user needs)
- Establish Committee within GGOS BPS
 - To create list of EGVs, assign requirements to them, etc.
 - Committee will include representatives of
 - IAG Services, Commissions, Intercommission Committees, GGOS Focus Areas

Revisions to Terms-of-Reference

- **Manager of External Relations**
 - Add description of Manager
 - Roles and responsibilities; selection process
- **GGOS Affiliates**
 - Add description of GGOS Affiliate
 - Representation on Consortium, Coordinating Board
- **Science Panel**
 - Add that each Focus Area nominates 1 candidate
 - Corrects omission to ToR that were approved in Prague
- **GGOS Inter-Agency Committee**
 - Remove references to GIAC which has been dissolved
 - GIAC has been effectively replaced by the UN Subcommittee on Geodesy
- **UN-GGIM and Subcommittee on Geodesy**
 - Add description as fundamental supporting element of GGOS
- **GGOS Chair**
 - Give in more detail process by which GGOS Chair is selected
 - Consistent with changes to be made to IAG Bylaws

Global Geodetic Observing System

- Requirements-setting organization for geodesy
 - GGOS 2020 book and its update
 - Essential Geodetic Variables
- Forum for international collaboration
 - Improve integrated, global geodetic infrastructure
 - Improve geodetic products
 - Unified Analysis Workshops
- Advocate for geodesy to broader community
 - Group on Earth Observations; Committee on Earth Obs. Satellites
 - Provide Earth observations (including geodetic) needed to make informed decisions
 - UN-GGIM Subcommittee on Geodesy
 - Emerging policy-making organization in geodesy
 - Emerging forum for international collaboration
- Incubator for new initiatives in geodesy
 - Unified Height System; Sea Level Change, Variability, & Forecasting
 - Geohazards; Geodetic Space Weather Research

Markus Rothacher (GGOS Chair), Achim Helm (GeoForschungsZentrum Potsdam)
Ruth E. Neillan (GGOS Vice-Chair) (Jet Propulsion Laboratory)
Hans-Peter Plag (GGOS Vice-Chair) (University of Nevada)

